Erin Go Braugh!

PATIENT CARE REVIEW: KETOGENIC DIET

2LT TANYA CRAIL

17 MARCH 2000

Patient

Name: S.T.

Admission Date: 8 March 2000

Reason for Admission: Initiation of ketogenic diet and diet instruction to family.

Diagnosis: Idiopathic seizures

WRAMC MNT Care Plan: None. Used WRAMC protocol for ketogenic diet.

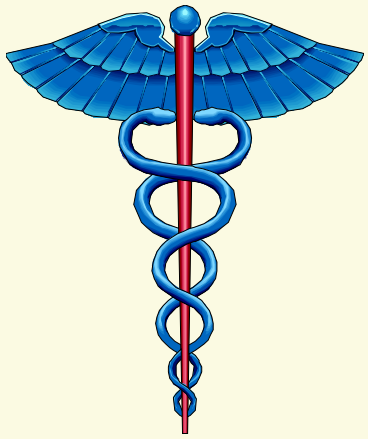
Review of the Diagnosis: Seizures

Definition: A recurrent paroxysmal disorder of cerebral function characterized by sudden brief attacks of altered consciousness, motor activity, sensory phenomena or inappropriate behavior.

Etiology:

Two main classifications

1. **Symptomatic**
2. **Idiopathic**



Review of the Diagnosis (continued)

- No obvious causes found in 75% of adults.
- Smaller percent found in children under 3.
- Before age 2, seizures are related to:
    * developmental defects
    * birth injuries
    * metabolic disease that affects the brain
- Treatment:
    * Elimination of causative factors
    * Drug therapy
    * Convulsion management

Review of the Diagnosis (continued)

Prognosis:

- Most patients are normal between attacks.
- Progressive mental deterioration usually

  related to accompanying neurologic disease
- Outlook is best when no b
  is

  demonstrated.

S.T.’s Seizures

Myoclonic seizures:

*** Spasm of muscle or group of muscles**

Tonic-Clonic seizures:

*** Also know as Grand Mal seizures.**

*** Tonic: normal state of balanced tension in the muscles essential for normal functions.**

*** Clonic: Abnormal activity of nerves sending signals to muscles. No control over tensing.**

Medical Treatment

Past medical/surgical hx:

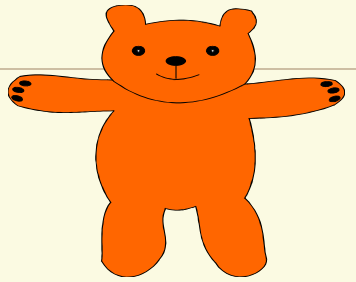
- 3 month hx of idiopathic seizures
- Developmental delays

Psycho-social family hx:

- Adopted at 13 months
- 1/2 brother also has seizures
- Father is AD USAF, mother stays at home
- Birth mother may have abused drugs and alcohol during pregnancy

Nutrition Hx: Unremarkable

The Ketogenic Diet Timeline



- Dates back to biblical days

- 1920-1940 diet used to mimick fasting state was used

  to treat seizures.

- 1938- Dilatin discovered, diet loses popularity as tmt

- 1994 - Media coverage of a family's success at Johns

  Hopkins with the diet brings it back into the spotlight.

Ketogenic Diet Facts

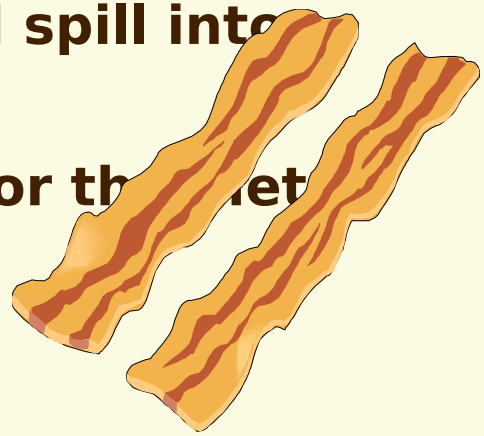
- Diet is most effective for myoclonic and minor motor seizures. Can help tonic-clonic.

- Used as secondary method of treatment when conventional anti-seizure meds do not work.

- Diet can be followed for up to two years if proven effective in seizure control.

Diet Overview

- High in fat and low in CHO's, leads to ketosis.
- Ketosis: occurs when body's CHO intake is limited and fat becomes primary fuel source.
- Ketones build up in blood and spill into urine.
- Ketones in urine are marker for the diet

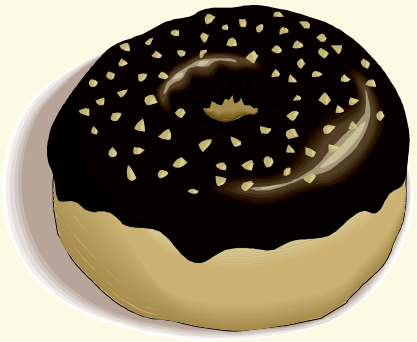


Three main components of the diet:

1. Extremely high fat diet (85-90%)

Factors that can upset ketosis:

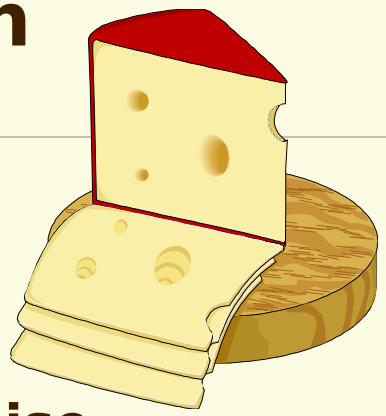
1. Misreading a food label
2. Error in weighing food
3. Routine childhood illness
4. Hidden CHO is toothpaste and meds
5. An extra beverage



WRAMC Ketogenic Diet Instruction

1. Pre-admit visit with outpatient pediatric dietitian.
2. Admission guidelines/criteria given to parents.
3. Monitoring during admission:
   * blood glucose
   * urine ketones & specific gravity
   * I's/O's
   * electrolytes
   * seizure activity
4. Routine during admission
5. Parent instruction

Typical Food Pattern



- **Fat sources:**
  - *** Heavy whipping cream**
  - *** Margarine, butter, mayonnaise**
- **Protein sources:**
  - *** meat, fish, poultry, cheese, eggs**
- **CHO's**
  - *** limited number of fruits and vegetables.**
- **Foods not allowed:**
  - *** calorie containing beverages, candy, bread,**

desserts, starchy vegetables

Designing the Diet

1. **Energy: 75-100% RDA**
2. **Protein: RDA for age**
3. **Fluid: Restricted, 4-6oz/hr**
4. **Ketogenic nutrient ratio: usually 3:1 or 4:1**

*** ratio of combined grams of pro and CHO**

Comparison to regular diet (in percent)

	Regular	Ketogenic
CHO	6	50
Pro	7	20
Fat	88	30

(based on 3:1 ratio)

Complications of the Diet

1. Complications during initiation
2. Nutrient inadequacy
3. Other possible complications:
    * decreased growth
    * osteoporosis
    * constipation
    * kidney stones
    * pancreatitis
    * hyperlipidemia
    * non-compliance (!!!!!!!!!!!!!!!!!!!!!!!!!!!!)

S.T. Physical Exam

Length: 84.6 cm

Weight: 12.07 kg

Head circumference: 47.6 cm (10-25%)

Weight for length: 50%

Length for age: 50%

Weight for age: 50-75%

Meds:

-Prior to admission: Valporic acid and Topiramate

-No meds on admission

Labs

Pre-admission labs (2 March 2000)			10 March 2000
Sodium	137	(137-145)	139
Potassium	3.9	(3.6-5.0)	4.9
Chloride	110	(98-107)	102
Carbon Dioxide	18	(22-30)	19
Glucose	98	(75-110)	73
BUN	10	(9-20)	10
Creatinine	0.5	(0.8-1.5)	0.5
Albumin	4.1	(3.5-5.0)	
Alk Phos	287	(38-126)	
AST	35	(17-59)	
ALT	30	(21-72)	
Magnesium	2.2	(1.6-2.3)	
Cholesterol	165	(50-200)	
HDL	46	(35-60)	
LDL	102	(0-129)	

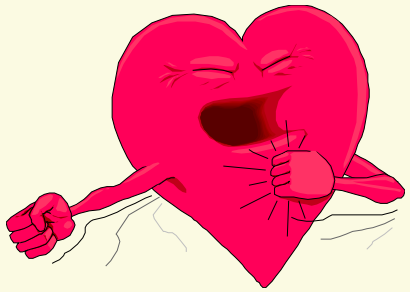
Labs

Glucose fingersticks:

9 March:

1715 70

2216 79



10 March

0157 73

0625 63

Labs

	Specific Gravity	Ketones
8 March 00		
1442	1.002	Negative
1525	1.007	Negative
1611	1.004	Negative
2151	1.015	15 mg/dL (1+)
9 March 00		
0132	1.006	15 mg/dL (1+)
1020	1.025	50 mg/dL (2+)
1211	1.025	150mg/dL (3+)
1543	1.020	150mg/dL (3+)
10 March 00		
0555	1.004*	50 mg/dL (1+)
0800	1.008	50 mg/dL (1+)
0919	1.016	50 mg/dL (1+)

Nutritional Assessment

Nutrition Diagnostic Statement:

S.T's current nutritional status is adequate based on pre-admission assessment, however with the change in his treatment plan, he is at increased nutritional risk due to the deficiencies and restrictions associated with the prescribed ketogenic diet.

Estimated caloric needs for ketogenic diet: 75% RDA

Estimated protein needs: 1.2/kg

Goal of Therapy and Outcomes

Goal of therapy/plan:

- To place S.T. on a ketogenic diet to control seizures.

- Reassess efficacy of diet after one month.

- If diet works, can be continued up to 2 years, with

with close nutrition monitoring.

Potential Health Outcomes:

- S.T. can live with minimal to no seizure activity.

- S.T. can overcome developmental delays.

Potential Resources Saved:

QUESTIONS?????